

A NEW SPECIES OF ACANTHOCEPHALA FROM THE GREENBACK FLOUNDER, *RHOMBOSOLEA TAPIRINA* GÜNTHER, 1862

by S. J. EDMONDS* & L. R. SMALES**

Summary

EDMONDS, S. J. & SMALES, L. R. (1992) A new species of Acanthocephala from the greenback flounder *Rhombosolea tapirina* Günther, 1862. *Trans. R. Soc. S. Aust.* 116(1), 35-38, 29 May, 1992.

Aspersentis minor sp. nov. (Acanthocephala: Heteracanthocephalidae) is described from the small intestine of *Rhombosolea tapirina* Günther, 1862 from Tasmania, Australia. It is distinguished from other species in the genus by the small size of the trunk, proboscis and proboscis hooks.

KEY WORDS. Acanthocephala, *Aspersentis minor* sp. nov., Australia, *Rhombosolea*, taxonomy.

Introduction

About 30 small acanthocephalans, were collected from the small intestine of the greenback flounder, *Rhombosolea tapirina* Günther, 1862 in Tasmania by Dr D.L. Obendorf on 16 June 1986. The collection contained only one male. These are considered to be a new species and are described here.

Materials and Methods

Specimens were stained in haematoxylin by conventional methods and mounted in balsam. Illustrations and measurements were made with the aid of an ocular micrometer, drawing tube and measuring wheel. Measurements are given in millimetres unless otherwise stated. Where possible the range of measurements is followed by the mean in parenthesis. Type material has been deposited in the South Australian Museum, Adelaide (SAM).

Systematics

Phylum: Acanthocephala Koelruther, 1771

Class: Palaeacanthocephala Meyer, 1931

Family: Heteracanthocephalidae Petrochenko, 1956

Genus: *Aspersentis* van Cleave, 1929

Aspersentis minor sp. nov.

FIGS 1-8

Male (one specimen in poor condition): Trunk spindle-shaped, length 1.6, maximum width in mid-trunk region 0.28; anterior region bearing numerous rows of small spines, most noticeable and largest ventrally. Field of spines extends ventrally for about a quarter of body length, but less extensive dorsally.

Remainder of trunk, including genital region, without spines. Proboscis (almost completely extended), set at angle to trunk, cylindrical to clavate with armed section 0.23 long and 0.12 wide, bearing 14 rows of 7-8 hooks per row. Dorsal and ventral hooks differ markedly in size and shape, the latter being much larger. Short unarmed, truncated neck about 0.15 long. Two ovoid testes tandemly placed. Cement glands, pyriform and pressed closely together but number not clear. Proboscis receptacle double walled, 0.32 long with ganglion placed near base. Lemnisci about as long as receptacle. Male aperture subterminal.

Female (based on 10 mounted specimens): Trunk spindle-shaped, length 2.4-4.1 (3.2), maximum width 0.37-0.75 (0.54) in mid-trunk region; field of spines extends for about a quarter of body length ventrally, less extensive dorsally, a few tiny cuticular spines present at posterior end of some specimens. Proboscis, placed at slight angle to trunk, cylindrical to clavate 0.24-0.32 (0.26) long \times 0.10-0.17 (0.14) wide and armed with 14-15 rows of 7-9 hooks per row. Ventral and dorsally placed hooks differ most noticeably in size and shape (Figs 1,2). Longest ventral hooks (third in row) measure 0.062-0.080 (0.065), longest dorsal hooks 0.030-0.035 (0.032). Unarmed truncated neck 0.15-0.28 long. Receptacle, maximum dimensions 0.52 long \times 0.19 wide, double walled, with ganglion lying near its base. Genital complex long, extending in most specimens about half length of trunk. Embryonated eggs, slender 0.068-0.077 (0.071) \times 0.012-0.019 (0.015) with prolongations of middle shell. Small terminal papilla (invaginule) present in most specimens. Female aperture almost terminal.

Host: greenback flounder, *Rhombosolea tapirina* Günther, 1862.

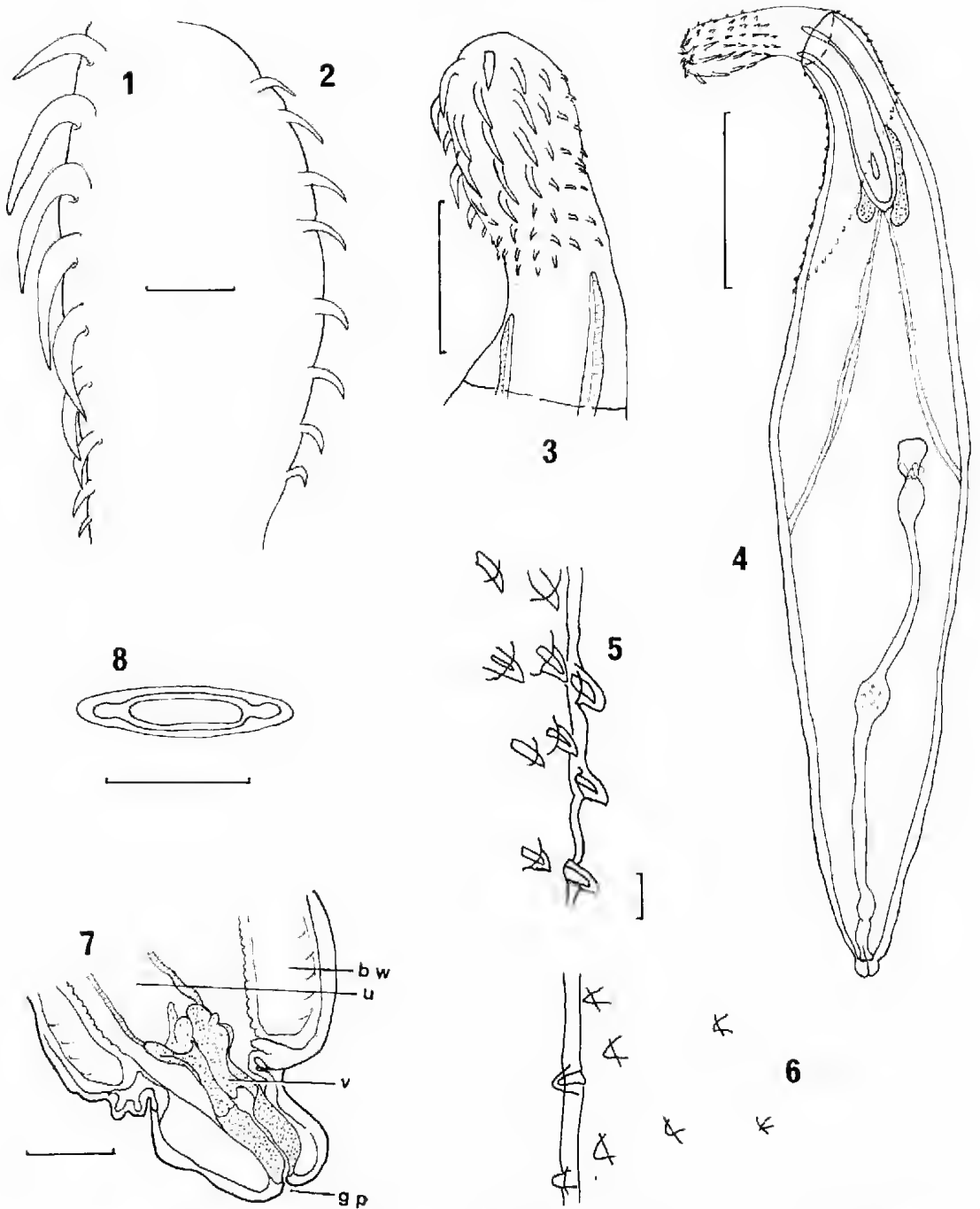
Location: small intestine

Locality: Tasmania, Australia

Type specimens: Holotype male: SAM V4150, Paratype female: SAM V4151

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Figs 1-8. *Aspersentis minor* sp. nov. ♀ from *Rhombosolea tapirina*. 1. Proboscis hooks, ventral row. 2. Proboscis hooks, dorsal row. 3. Proboscis. 4. Whole mount. 5. Cuticular spines, dorsal surface. 6. Cuticular spines, ventral surface. 7. Vaginal region extended. 8. Egg. Scale bars: Figs 1, 2, 5 & 6, 50 μ m. Fig. 3, 0.2mm. Fig. 4, 0.5mm, Fig. 7, 80 μ m. Abbreviations: b w, body wall; g p, gonopore; u, uterus; v, vagina.

Discussion

The specimens of *Aspersentis minor* sp. nov. most closely resemble *A. austrinus* van Cleave, 1929 from Antarctic fish and subsequently redescribed by Zdzitowiecki (1981) from hosts from the Antarctic and sub-Antarctic islands. *A. austrinus* was also reported by Joyeux & Baer (1954), Edmonds (1955, 1957), Golvan (1969), Zdzitowiecki & Rokosz (1986) and Zdzitowiecki (1990). Similarities include the number of rows of proboscis hooks, which for *A. austrinus* is 13-16 (usually 14) rows of 7-11 hooks and for *A. minor* 14-15 rows of 7-9; and in the size of the embryophores, which for the former is $0.060-0.088 \times 0.019-0.025$ and for the latter $0.068-0.077 \times 0.012-0.019$. The specimens differ most notably in the size of the trunk, which is 4.9-8.5 for female *A. austrinus* as compared with 2.4-4.1 for female *A. minor*, the proboscis length, which for the former is 0.51-0.73 and the latter 0.24-0.32, and the length of the largest ventral hook, 0.12-0.15 as compared with 0.06-0.08.

Golvan (1969) considered *Echinorhynchus megarhynchus* (Linstow, 1892) to be a senior synonym of *A. austrinus*, a determination that was followed by Amin (1985) in his classification of the Acanthocephala. Amin, however, appears to have overlooked Zdzitowiecki's (1981) redescription of *A. austrinus* based on more than 1350 specimens collected from South Georgia and the South Shetlands. Zdzitowiecki (1981) concluded that *Echinorhynchus (sensu lato) megarhynchus*, as described by Linstow, was "impossible to identify with any more recently described species". Subsequently Zdzitowiecki & Rokosz (1986), then Zdzitowiecki (1990), on the basis of the re-examination of old material and the collection of new material, confirmed the validity of *A. megarhynchus* (Linstow, 1892) *syn. E. megarhynchus* Linstow, 1892 *nee A. megarhynchus sensu* Golvan, 1960. *E. megarhynchus* lacks body or cuticular spines and no asymmetry is described for its proboscis hooks.

A. austrinus and *A. minor* differ from it in both these characters. *A. minor* also differs from *Heteracanthocephalus pectorhamphi* (Baylis, 1944) and *H. kureaui* Dollfus, 1964, both of which lack body spines.

In his redescription of *A. austrinus*, Zdzitowiecki (1981) commented on the distribution of spines over the trunk. Because he found specimens in which tiny spines, often embedded in the cuticle, were present either over the middle and/or posterior regions of the trunk as well as larger more obvious spines on the anterior trunk, he accordingly proposed an emendation of the generic diagnosis. The armature on the distal part of the body is particularly difficult to determine, especially if the material is contracted or methods of preparation have rendered spines hard to detect. The specimens of *A. minor* described here were found to have spines over the anterior trunk and sparsely scattered, tiny spines on the posterior of some specimens.

Zdzitowiecki (1981) found considerable differences in the size of specimens from *A. austrinus* populations collected from South Georgia and the South Shetlands. He found that specimens from South Georgia, where water temperatures are higher, were on average 30% larger and their proboscises, receptacles and lemnisci 10-20% larger (Table 1). He suggested that these differences in body dimensions might depend on different environmental conditions, (for example water temperatures) where host populations occur. Similar reasoning cannot be used to explain the difference in size between the Tasmanian and South Georgian specimens since the annual water temperature around Tasmania varies from 10-20°C and around South Georgia from 5-10°C (Plate 3 The Times Atlas of the World), and the Tasmanian specimens are not larger but smaller. They are also smaller than *A. austrinus* described from *Nothentia exarbraucha* Richardson from Heard Island (Edmonds 1955). Although considerable variation in measurements has been found

TABLE 1. A comparison of female body measurements of *Aspersentis austrinus* Van Cleave, 1929 from the South Shetlands and South Georgia, and *A. minor* sp. nov. from Tasmania.

	South Shetlands	South Georgia	Tasmania
trunk length	4.93-8.42(5.79)	6.94-8.54(7.25)	2.3-4.1(3.2)
trunk width	1.16-1.79(1.49)	1.09-2.09(1.73)	0.31-0.95(0.54)
proboscis length	0.51-0.66(0.59)	0.67-0.73(0.70)	0.24-0.32(0.28)
proboscis width	0.29-0.32(0.30)	0.29-0.35(0.32)	0.10-0.17(0.14)
dorsal hook length (maximum)	0.054-0.064(0.060)	0.060-0.065(0.062)	0.03-0.035(0.032)
ventral hook length (maximum)	0.119-0.137(0.126)	0.132-0.149(0.140)	0.062-0.08(0.065)
neck length	0.17-0.03(0.126)	0.22-0.31(0.27)	0.12-0.25
egg	0.060-0.088 $\times 0.019-0.025$	0.071-0.087 $\times 0.020-0.025$	0.068-0.077 $\times 0.012-0.016$
hook disposition	13-16 rows of 7-11 hooks/row		14 rows of 7-9 hooks/row

between populations of *A. austrinus*, measurements of *A. minor* clearly fall outside their range. Moreover the smaller size of *A. minor* goes against the trend, established for *A. austrinus*, that specimens from populations from hosts of warmer waters tend to be larger than specimens from cooler waters. Therefore *A. minor* is considered sufficiently different to be a new species.

A re-examination of *A. austrinus* from Heard Island shows that in addition to the spines on the anterior body surface reported by Edmonds (1955), small spines are

also present on some other regions of the trunk, a feature previously overlooked.

Analysis of the ratios of male to female *A. austrinus* sp. (Zdzitowiecki 1981; Zdzitowiecki & Rokosz 1986) has shown that there is both a twofold predominance of females over males and a difference of preferred location in the host, males preferring the posterior half of the small intestine and females the large intestine. A similar difference may explain why the ratio of males to females of *A. minor* collected from the greenback flounder was 1:30.

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